REMARKS

Applicant respectfully requests reconsideration of the present application in view of the reasons that follow.

Claims 1-10 remain pending in this application.

Claim Rejections under 35 U.S.C. § 102

Claims 1, 4, 5, 7, 8 and 10 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,947,758 ("Nguyen"). In response, Applicant respectfully traverses the rejection for the reasons set forth below.

Applicant relies on M.P.E.P. § 2131, entitled "Anticipation – Application of 35 U.S.C. § 102(a), (b) and (e)" which states, "a claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Applicant respectfully submits that Nguyen does not describe each and every element of independent claim 1.

The claimed invention is directed to a method for assigning a mobile subscriber roaming number, wherein in a Visitor Location Register, the mobile subscriber roaming number is managed by a plurality of Visitor Location Register modules. Claim 1 recites: "[a] method for assigning a mobile subscriber roaming number, wherein in a Visitor Location Register, the mobile subscriber roaming number is managed by a plurality of Visitor Location Register modules, characterized in that: said mobile subscriber roaming number comprises a Visitor Location Register module number, and said Visitor Location Register module number is utilized to directly determine the correspondence relationship between said assigned mobile subscriber roaming number and the Visitor Location Register module in said Visitor Location Register that manages said mobile subscriber roaming number." Accordingly, in claim 1, a Mobile Subscriber Roaming Number ("MSRN") comprises a Visitor Location Register ("VLR") module number. For example, in one embodiment of the claimed invention, the structure of the MSRN number is:

Country Code ("CC") + MSC number + VLR module number + MRSN information table record number

Thus, in a system where the MSRN is managed by a plurality of VLR modules, a specific VLR module can be located according to the MSRN. Accordingly, when a Mobile Switching Center ("MSC") receives a MSRN as claimed in claim 1, the relationship between an assigned mobile subscriber roaming number and a VLR module in the VLR that manages the mobile subscriber roaming number can be determined.

Ngyuen does not disclose, teach or suggest the limitations of the claimed invention. Specifically, Ngyuen does not disclose, teach or suggest a method for assigning a mobile subscriber roaming number wherein the mobile subscriber roaming number comprises a Visitor Location Register module number as claimed in claims 1 and 7.

The technical problem solved by the present invention is different from Nguyen. The claimed invention is used to solve a message routing problem when a MSC receives an event request message with a MSRN, while Nguyen is directed to solving a message routing problem when MSC receives an event request message with a Temporary Mobile Station Identification (TMSI). *See* Col. 8, lines 10-15, stating, "[a]s will be shown, the present invention enables MSC 400 to efficiently distribute subscriber records to the appropriate processing elements (470, 480,…,490) by taking advantage of the flexibility that MSC 400 has over the process of assigning a TMSI number (and a P-TMSI number) to a mobile station."

In Nguyen, a TMSI assignment is optimized and information related to VLR modules is carried in a TMSI number. Thus, when a MSC receives a message carrying TMSI, the related VLR module can be located. However, Nguyen is only used in a scenario where a service request message carries the TMSI.

In contrast, the present invention relates to optimization of a MSRN assignment, in which the MSRN carries information related to VLR modules. When a MSC receives IAM signaling from other MSC's, the MSRN is extracted from the IAM signaling (which has no TMSI number). The VLR module can then be obtained based on the MSRN.

On page 2 of the Office Action, the Examiner incorrectly asserts that a TMSI is equivalent to a MSRN. TMSI and MSRN are different parameters and have different

definitions and usages. Referring to the ETSI TS23.003 definition, the TMSI and MSRN are defined respectively as follows.

(1) ***Definition of TMSI*** - Referring to Section 2.1, "in order to support the subscriber identity confidentiality service the VLRs and SGSNs may allocate Temporary Mobile Subscriber Identities (TMSI) to visiting mobile subscribers. The VLR and SGSNs must be capable of correlating an allocated TMSI with the IMSI of the MS to which it is allocated". "An MS may be allocated two TMSIs, one for services provided through the MSC, and the other for services provided through the SGSN (P-TMSI for short)."

Referring to Section 2.4, "structure of TMSI", "since the TMSI has only local significance (i.e. within a VLR and the area controlled by a VLR, or within an SGSN and the area controlled by an SGSN), the structure and coding of it can be chosen by agreement between operator and manufacturer in order to meet local needs".

"The TMSI consists of 4 octets. It can be coded using a full hexadecimal representation". "In order to avoid double allocation of TMSIs after a restart of an allocating node, some part of the TMSI may be related to the time when it was allocated or contain a bit field which is changed when the allocating node has recovered from the restart".

"In areas where both MSC-based services and SGSN-based services are provided, some discrimination is needed between the allocation of TMSIs for MSC-based services and the allocation of TMSIs for SGSN-based services. The discrimination shall be done on the 2 most significant bits, with values 00, 01, and 10 being used by the VLR, and 11 being used by the SGSN".

"If intra domain connection of RAN nodes to multiple CN nodes as described in 3GPP TS 23.236 [23] is applied in the MSC/VLR or SGSN, then the NRI shall be part of the TMSI. The NRI has a configurable length of 0 to 10 bits. A configurable length of 0 bits indicates that the NRI is not used and this feature is not applied in the MSC/VLR or SGSN. The NRI shall be coded in bits 23 to 14. An NRI shorter than 10 bits shall be encoded with the most significant bit of the NRI field in bit 23".

"The TMSI shall be allocated only in ciphered form. See also 3GPP TS 43.020 [7] and 3GPP TS 33.102 [42]".

"The network shall not allocate a TMSI with all 32 bits equal to 1 (this is because the TMSI must be stored in the SIM, and the SIM uses 4 octets with all bits equal to 1 to indicate that no valid TMSI is available)."

"To allow for eventual modifications of the management of the TMSI code space management, MSs shall not check if an allocated TMSI belongs to the range allocated to the allocating node. MSs shall use an allocated TMSI according to the specifications, whatever its value. "

(2) ***Definition of MSRN*** - Referring to Section 3.4, "Mobile Station Roaming Number (MSRN) for PSTN/ISDN routing", "the Mobile Station Roaming Number (MSRN) is used to route calls directed to a MS. On request from the Gateway MSC via the HLR it is temporarily allocated to a MS by the VLR with which the MS is registered it addresses the Visited MSC collocated with the assigning VLR. More than one MSRN may be assigned simultaneously to a MS."

"The MSRN is passed by the HLR to the Gateway MSC for routing calls to the MS."

"The Mobile Station Roaming Number for PSTN/ISDN routing shall have the same structure as international ISDN numbers in the area in which the roaming number is allocated, i.e.:

- the country code of the country in which the visitor location register is located;

- the national destination code of the visitor GSM PLMN or numbering area;

- a subscriber number with the appropriate structure for that numbering area. "

"The MSRN must not be used for subscriber dialing. It should be noted that the MSRN can be identical to the MSISDN (subclause 3.3) in certain circumstances. In order to discriminate between subscriber generated access to these numbers and rerouting performed by the network, rerouting or redirection indicators or other signaling means should be used, if available (see GSM 09.03). "

It can be seen from above definitions in the ETSI reference that TMSI is used in wireless interfaces and is a temporary subscriber identity instead of IMSI, and that MSRN is

used in interfaces between MSCs and replaces MSISDN for routing. Accordingly, TMSI and MSRN are different subscriber identities.

Referring to the ETSI TS23.002-360 protocol, the basic configuration of a Public Land Mobile Network (PLMN) supporting GPRS and the interconnection to the PSTN/ISDN and PDN is presented in the following diagram. This configuration presents signaling interfaces which can be found in a PLMN. Implementations may be different: some particular functions may be gathered in the same equipment and then some interfaces may become internal interfaces. In this diagram, bold lines represent interfaces supporting user traffic; dashed lines represent interfaces supporting signaling. It should be noted that the diagram shows direct interconnections between the entities and the actual links may be provided by an underlying network (e.g. SS7 or IP). When the MSC and the SGSN are integrated in a single physical entity, this entity is called UMTS MSC (UMSC).
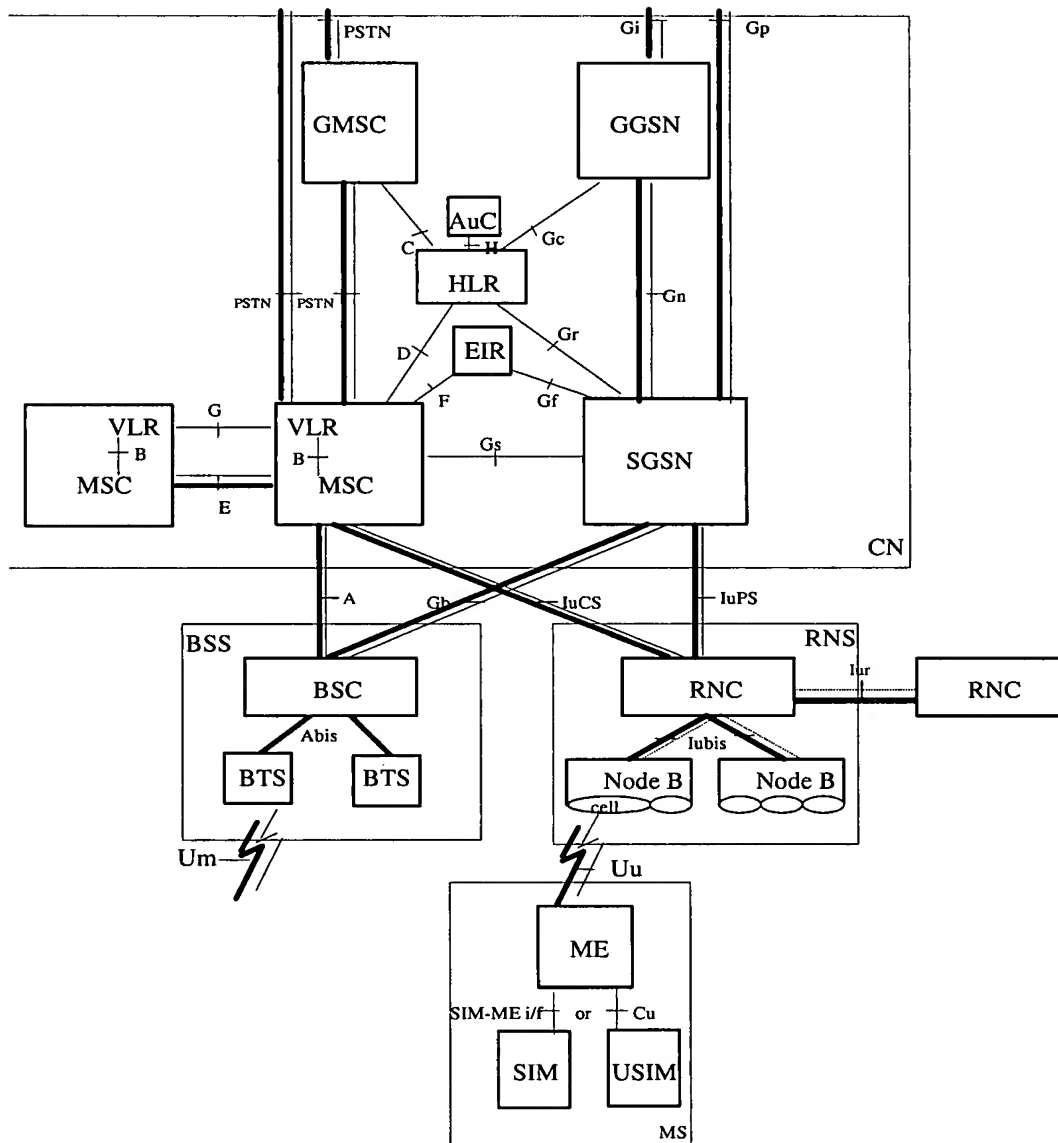
In the basic configuration presented in above diagram, all the functions are considered implemented in different equipments. Therefore, all the interfaces within PLMN are external. Interfaces A and Abis are defined in the GSM 08-series of Technical Specifications. Interfaces Iu, Iur and Iubis are defined in the UMTS 25.4xx-series of Technical Specifications. Interfaces B, C, D, E, F and G need the support of the Mobile Application Part of the signaling system No. 7 to exchange the data necessary to provide the mobile service. No protocols for the H-interface and for the I-interface are standardized. All the GPRS-specific interfaces (G- series) are defined in the UMTS 23-series and 24-series of Technical Specifications.

From this configuration, all the possible PLMN organizations can be deduced. In the case when some functions are contained in the same equipment, the relevant interfaces become internal to that equipment.

A MSC has multiple interfaces such as Interfaces A, C, D and E. Interface A is an interface between a MSC and a BSC. Interface C is an interface between a MSC and a HLR. Interface D is an interface between a VLR and a HLR. Interface E is an interface between a MSC and a MSC. In general, a MSC receives messages through the interfaces and processes related events. However, when the messages are received from the interfaces, a subscriber whose recording is stored in a VLR must be located. The subscriber identities corresponding to the respective interfaces are different from each other, for example, TMSI corresponds to interface A, MSISDN corresponds to interface C, IMSL corresponds to interface D and MSRN corresponds to interface E. So a TMSI having VLR module number information can only be used in message routing of interface A and cannot be used for interface E. For interface E, only MSRN having VLR module number information can be used.

Further, the way in which Nguyen adds the VLR module number into the subscriber identity differs greatly from the claimed invention. Applicant refers the examiner to Fig. 7, col. 10, lines 45-67, col. 11 and lines 1-4 of Nguyen.

Nguyen discloses that the VLR module number can be determined by fragmentation, as shown in the following table:

	VLR-1 750	VLR-2 760	VLR-3 770
Lower Limit of TMSI	TMSI-1	TMSI-Q+1	TMSI-R+1
Upper Limit of TMSI	TMSI-Q	TMSI-R	TMSI-N

Thus, when the MSC obtains the VLR module number, firstly it is determined in which fragment the TMSI number is contained, and then the VLR module can be determined.

This resource fragmentation method was discussed in the background portion of Applicant's disclosure on pages 4 and 5. In contrast, in the claimed invention the VLR module number is contained in the MSRN, i.e. MSRN = CC + MSC number + VLR module number + MSRN information table record number. Thus the VLR module number can be obtained by decomposing the MSRN.

-8-

Thus, Applicant respectfully requests reconsideration of claim 1 and that the rejection be withdrawn. In addition, claims 2 and 5-10 depend from claim 1 and are allowable for at least the reasons set forth above.

Claim Rejections under 35 U.S.C. § 103

Claims 2, 3 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nguyen in view of U.S. Patent No. 6,148,200 ("Lahtinen").

Claims 2, 3 and 9 depend from claim 1 and are allowable for at least the reasons set forth above without regard to further patentable limitations recited therein. Accordingly, Applicant respectfully requests reconsideration of claims 3 and 4 and that the rejection be withdrawn.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date __10/31/07__   By _____ Reg. No. 59,396

FOLEY & LARDNER LLP   William T. Ellis
Customer Number: 22428   Attorney for Applicant
Telephone: (202) 672-5485   Registration No. 26,874
Facsimile: (202) 672-5399

-10-